

CLAIMS

What is claimed is:

1. A method for diluting a concentrated solution of sterilant for sterilizing instruments or equipment comprising the steps:

providing an eductor, the eductor comprising a metering tip having a first orifice size, a chemical inlet port, and a water inlet port;

hooking a container containing concentrated sterilant to the chemical inlet port of the eductor;

hooking a water supply source to the water inlet port of the eductor, the water supply source comprising a regulating valve for regulating a working pressure of the water supply;

activating the eductor to mix water and concentrated sterilant to a desired admixture containing a volume of sterilant to a volume of water;

adjusting the admixture by varying the volume of the sterilant to the volume of water by varying at least one of the metering tip to one having a second orifice size or the working pressure of the water supply to the eductor; and

using the admixture to sterilize an instrument for use in treating a subject.

2. The method according to claim 1, wherein the concentrated sterilant is a 50% or less by weight solution of glutaraldehyde to water.

3. The method according to claim 1, wherein the eductor comprises a second chemical inlet and wherein a container containing a pH adjusting agent is connected to the second chemical inlet port.

4. The method according to claim 1, wherein the regulating valve regulates the water supply source to a water pressure of less than 50 psi.

5. The method according to claim 1, further comprising the step of mounting the eductor in a health care facility.

6. The method according to claim 1, further comprising the step of providing a pressure gauge downstream of the regulating valve.

7. The method according to claim 1, further comprising the steps of providing a second eductor and hooking a container containing at least one of a disinfectant, a sporicide, a biocide, a virucide, or a fungicide to a chemical inlet port of the second eductor.

8. The method according to claim 1, further comprising a barb assembly connected to the eductor's chemical inlet port and the metering tip is connected to the barb assembly.

9. The method of claim 3, wherein the admixture produced comprises about a 3.2% by weight of glutaraldehyde, about a 0.925% by weight of the pH adjusting agent, and a balance by weight of water.

10. A method for diluting a concentrated chemical solution with water for use in a health care facility comprising the steps:

providing an eductor housed in a housing;

adjusting the eductor's output by adjusting a regulated valve to adjust a water supply pressure to a first pressure and adjusting a chemical inlet back pressure by selecting a metering tip having a first orifice size;

hooking an inlet line connected to a container containing the concentrated chemical solution to the eductor's chemical inlet port;

hooking an inlet line from a water supply source downstream of the regulating valve to the eductor's water inlet port;

activating the eductor so that water flows through the water inlet port and concentrated chemical solution flows through the chemical inlet port;

outputting the admixture into a holding container; and

applying the admixture to a surface inside a health care facility.

11. The method according to claim 10, wherein the concentrated chemical solution is a 50% by weight of glutaraldehyde to water.

12. The method according to claim 10, wherein the eductor is equipped with a second metering tip comprising a second orifice size.

13. The method according to claim 10, wherein the eductor comprises a second chemical inlet port and wherein a container containing a diluent is connected to the second chemical inlet port.

14. The method according to claim 10, wherein the regulating valve regulates the first pressure to less than 50 psi.

15. The method according to claim 10, further comprising the step of providing a pressure gauge downstream of the regulating valve.

16. The method according to claim 10, further comprising the steps of providing a second eductor and hooking a container containing at least one of a disinfectant, a sporicide, a biocide, a virucide, or a fungicide to a chemical inlet port of the second eductor.

17. The method according to claim 10, further comprising a barb assembly connected to the eductor's chemical inlet port and wherein the metering tip is connected to the barb assembly.

18. The method according to claim 13, wherein the admixture produced comprises about a 3.2% by weight of glutaraldehyde, about a 0.925% by weight of a pH adjusting agent, and a balance by weight of water.

19. An apparatus for diluting a concentrate comprising:
 - a proportioning and dispensing unit comprising at least two eductors, wherein a first eductor comprises a first chemical inlet port, a second chemical inlet port, a motive source inlet port, and an outlet port;
 - a first container containing a concentrate having a container outlet port and a first hose connecting the container outlet port to the first chemical inlet port;
 - a second container containing a pH adjusting agent having a container outlet port and a second hose connecting the container outlet port to the second chemical inlet port;
 - a line connecting a motive source to the motive source inlet port, the line comprising a regulating valve for regulating pressure supplied by the motive source,
 - a third hose for connecting to the outlet port of the eductor;
 - a push button for opening a valve on the first eductor so as to permit motive source to flow through the first eductor; and
 - wherein a first metering tip is removably received in the first chemical inlet port and a second metering tip is removably received in the second chemical inlet port.
20. The apparatus of claim 19, wherein the regulating valve is set to output less than 50 psi.
21. The apparatus of claim 19, wherein the concentrate is a sterilant comprising a 50% or less by weight of glutaraldehyde to water.
22. The apparatus of claim 19, wherein the first metering tip and the second metering tip each comprises an orifice.
23. The apparatus of claim 19, wherein the first meeting tip and the second metering tip each connects to a barb assembly.

24. The apparatus of claim 19, wherein the third hose is directed to a holding container for outputting an admixture into the holding container.

25. The apparatus of claim 19, further comprising a container containing at least one of a disinfectant, a sporicide, a biocide, a virucide, or a fungicide connected to a chemical inlet port of the second eductor.

26. A method for dispensing an admixture of fluid and water in a proportioning and dispensing unit comprising the steps:

(a) selecting a first metering tip comprising a first orifice size and coupling the metering tip to a chemical inlet port of an eductor, said eductor further comprising a water inlet port and an outlet port;

(b) connecting the water inlet port to a water supply source, said water supply source comprising a pressure regulator having a first water pressure set point;

(c) placing a holding container at the outlet port of the eductor for receiving an output stream from the eductor;

(d) selecting a first hose comprising a hose length, a first end, a second end, and unit gradations along at least a portion of the hose length;

(e) placing the first end of the first hose in fluid communication with the metering tip;

(f) filling the hose length with a quantity of fluid to a starting fluid level;

(g) activating the eductor to produce the admixture of fluid and water at the outlet port;

(h) de-activating the eductor to stop producing the admixture at the outlet port;

(i) determining an amount of fluid solution dispensed from the eductor by measuring the unit gradations on the first hose between the starting fluid level and a second fluid level measured after the eductor is de-activated;

- (j) determining a percent ratio of fluid dispensed to water used to dispense the fluid through the eductor; and
- (k) if the percent ratio of fluid to water is not as desired, changing at least one of the first metering tip having the first orifice size to a second metering tip having a second orifice size or the first water pressure set point of the pressure regulator to a second water pressure set point, and repeating steps (f) to (j).

27. A method for dispensing an admixture of concentrated chemical solution and water in a proportioning and dispensing unit comprising:

mounting two eductors to a housing and mounting the housing in a health care facility, the two eductors having a common water inlet header;

connecting a first chemical to a chemical inlet port of the first eductor;

connecting a second chemical to a chemical inlet port of the second eductor;

connecting a water supply line to the common water inlet header; the water supply line comprising a regulating valve;

activating at least one of the first eductor or the second eductor to produce an admixture of at least one of the first chemical and water or the second chemical and water; and

wherein the chemical inlets of the first and second eductors each comprises a metering tip having an orifice.

28. The method of claim 27, wherein the first chemical is a 50% or less by weight of glutaraldehyde to water.

29. The method of claim 27, wherein the second chemical is a pH adjusting agent.

30. The method of claim 27, wherein the first chemical is a 50% by weight of glutaraldehyde to water and the second chemical is a diluent.

31. The method of claim 1, further comprising the step of adjusting the working pressure up or down while leaving the metering tip with the first orifice size alone to vary the admixture of sterilant and water.

32. The method of claim 1, further comprising the step of adjusting the metering tip to one having a second orifice size while leaving the working pressure alone to vary the admixture of sterilant and water.

33. The method of claim 1, further comprising hooking the water supply source to an inlet of a booster pump and hooking a pump outlet to the water inlet port of the eductor.

34. The method of claim 10, further comprising hooking the water supply source to an inlet of a booster pump and hooking a pump outlet to the regulating valve.

35. The apparatus of claim 19, further comprising a booster pump, wherein the booster pump is connected in between the motive source and the regulating valve.

36. The apparatus of claim 1, wherein the concentrated sterilant is one of a concentrated disinfectant, a concentrated antiseptic, a concentrated sporicide, a concentrated biocide, a concentrated virucide, or a concentrated fungicide.

37. The method of claim 10, wherein the concentrated chemical solution is a concentrated photochemical.

38. The apparatus of claim 19, wherein the concentrate is a concentrated photochemical.

39. The method of claim 27, wherein the first chemical is a concentrated photochemical.